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CENTRAL INTELLIGENCE AGENCY

REPORT NO.

## INFORMATION REPORT

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COUNTRY East Germany

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SUBJECT Analyses of Zeitz Chemical Products

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The following list gives the elemental analyses (Elementaranalysen) of chemical products manufactured by Zeitz:

<u>Characteristics</u>	<u>Guaranteed Value</u>	<u>Testing Method</u>
<u>Sulphur</u>		
Color	Yellow	Extraction with sodium sulfide and oxidation of the sulphur in solution to sulphate.
Sulphur content	99.9 %	Burning in a crucible in a retort furnace
Ash content	0.02 - 0.05 %	Dissolving of sulphur in sodium sulphide and determination of the insoluble part by filtration and weighing
Insoluble sodium sulphide	0.05 - 0.08 %	Drying oven method at 70°C
Moisture content	0.0 - 0.2 %	From ashes: the iron is extracted with hydrochloric acid and tested colorimetrically as iron iodide (Eiseniodid)
Iron content	traces	Fresenius and Beck method: evaporation of the sulphur in a crucible on a sand bath at 200°C, with examination of the ash content
Amount of bituminous substance	0.01 %	
<u>Diesel fuel</u>		
appearance	light to dark, free of impurities	
Specific weight at 20°C	0.800 - 0.900	Areometer
Boiling point	160°C - 260°C	Engler boiling analysis
Conversion up to 300°C	Not less than 60 % by volume	Engler boiling analysis
Water content	Not more than 0.50 %	Xylol method

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<u>Characteristics</u>	<u>Guaranteed Value</u>	<u>Testing Method</u>
Ash content	At the most 0.05 %	Burning in an incineration retort.
Hard asphalt content	0 %	Test with normal gasoline
Flash point	At the least 55°C At the most 145°C	Pensky-Martens test in a closed crucible
Conradson test	Maximum of 0.2 %	Conradson apparatus
Neutralisation number	Not over 0.2 mgKOH/g	Titration with alcohol-KOH solution
Cetane rating	Minimum of 40	Test diesel
Zinc strip test	Maximum of 4	Immersion of a zinc strip for one hour at 50°C and 100°C
Beginning of paraffin separation	Not over - 5°C in winter	
Solidifying point		
Summer	0°C	
Winter	-10°C	
<u>White Paraffin</u>		
Specific weight at 70°C	0.775 - 0.779	Areometer
Appearance	White crystalline mass	
Odor	None	
Stability of color	No desoloration	Seven days exposure to light
Boiling characteristics	370°C - 480°C	Vacuum distillation at 10 mm. Mercury
Water-soluble acids and lyes	None	After extraction with water titration with n/10 caustic soda solution and n/10 sulphuric acid
Pollution	None	Extraction with benzene
Melting point	54°C - 58°C	Shukoff method and thermometer
Oil content	Below 1.0 %	Acetone method at - 20°C
Sulphur content	Below 0.1 %	Burning in an oxyhydrogen apparatus or Grote-Krekeler apparatus
<u>TTH Paraffin</u>		
Specific weight at 70°C	0.775 - 0.782	Areometer
Boiling characteristics (converted to normal pressure)	360°C - 460°C	Vacuum distillation at 10 mm. Mercury
Melting point	50°C - 54°C	Rotary thermometer
Oil content	5 - 7 %	Acetone method at -20°C
Paraffin content	93 - 95 %	Acetone method
Flash point	205°C - 210°C	Marcussen method in open crucible
Molecular weight	380 - 400	Lowering freezing point according to Beckmann (Naphthalene)
Sulphur content	Maximum of 0.1 %	Oxyhydrogen incineration apparatus or Grote-Krekeler apparatus
<u>Machine oil</u>		
Specific weight at 20°C	0.900 - 0.915	Areometer
Viscosity at 50°C	6.0 - 7.0°E	Vogel-Ossag apparatus, based on °E 1/
Solidifying point	-4°C - -12°C	Decreasing temperature by stages in a cold bath
Flash point	210°C - 225°C	Marcussen method, in an open crucible
Neutralization number	0.0 - 0.1 mg.KOH/g.	Titration with n/10 alcohol-caustic soda solution
Saponification number	0.0 - 0.15 mg.KOH/g.	After saponification titration with n/10 hydrochloric acid
Water content	0.0 %	Xylol standard method
Ash content	0.004 - 0.006 %	Incineration in a retort at 800°C
Hard asphalt content	0 %	Normal gasoline
Fatty oil content	none	Saponification number
Viscosity polar altitude (Polhoehe)	2.1 - 2.5	Calculated according to Ubbelohde

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<u>Characteristics</u>	<u>Guaranteed Value</u>	<u>Testing Method</u>
Conradson test	0.03 - 0.2 %	Conradson apparatus
Evaporation according to Noack at 250°C	8 - 15 %	Noack apparatus
Boiling characteristics (converted to normal pressure)	430°C - 520°C	Vacuum distillation at 10 mm. Mercury
<u>Spindle oil</u>		
Specific weight at 20°C	0.890 - 0.900	Areometer
Viscosity at 50°C	2.0 - 3.0°E	Vogel-Ossag apparatus based on °E
Solidifying point	-4°C - -12°C	Decreasing temperature by stages in a cold bath
Flash point	185°C - 200°C	Marcusson method, in an open crucible
Neutralization number	0.0 - 0.15 mg.KOH/g.	Titration with n/10 alcohol-caustic soda solution
Water content	Free of water	Xylol standard method
Ash content	Traces	Incubation in a retort at 300°C
Hard asphalt content	None	Normal gasoline
Fatty oil content	None	Saponification number
Boiling characteristics (converted to normal pressure)	350°C - 430°C	Vacuum distillation at 10mm. Mercury
<u>Crude Phenol oil</u>		
Specific weight at 20°C	1.030 - 1.040	Areometer
Water content	10 - 15 %	Xylol standard method
Neutral oil content	About 0.5 %	Circulatory distillation in alkaline solution
Carbolic acid	About 16 - 20 % )	Fractionated distillation
Cresols	About 40 - 50 % )	in a "Kupferblase" according to the formation method
Xylenols	About 20 - 25 % )	(Verbandsmethode)
Elements with higher boiling points, residue	About 4 - 5 % )	
<u>Gasoline</u>		
Appearance	Water clear, free of impurities	
Specific weight at 15°C	Below 0.800	Areometer
Boiling point	Below 60°C	
Boiling characteristics		Engler boiling analysis
Conversion up to 100°C	At least 20 % by volume )	
Conversion up to 200°C	At least 95 % by volume )	
Vapor pressure according to Reid		
Summer	At the most 0.6 atmospheres )	Bomb apparatus
	up to 40°C )	
Winter	At the most 0.8 atmospheres )	
	up to 40°C )	
Evaporation residue (Abdampfrest)	At the most 20 mg./100 cm <sup>3</sup>	Evaporation residue from 100 cm <sup>3</sup> of fuel at 110°C in a glass bowl (Glaschale)
Sulphur content	At the most 0.3 %	Burning in an oxyhydrogen apparatus or a Grote-Krekeler apparatus
Neutralization number	At the most 0.3 mg. KOH/g.	Titration with n/10 alcohol-KOH solution
Copper strip test	Negative	Immersion of a copper strip in 50 ccm. of gasoline for one hour at 50°C and 100°C
Octane rating	57 unleaded 68 leaded	Motor method
<u>Fuel gas</u>		
Vapor pressure according to Reid		
Summer	At least 0.7 atmospheres at 0°C )	
	At most 16.7 atmospheres at 40°C )	Bomb apparatus
Winter	At least 1.5 atmospheres at -15°C )	
	At most 16.7 atmospheres at 40°C )	

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<u>Characteristics</u>	<u>Guaranteed Value</u>	<u>Testing Method</u>
Composition		
Summer	At most 75 % butane by weight At most 3 % inert gasses by weight	Analysis according to Stock, fractionated distillation in a high vacuum
Winter	Remainder propane and ethane At most 65 % butane by weight At most 3 % inert gasses by weight	
	Remainder propane and ethane	
	Not over 0.2 %	
Sulphur content		Burning in an oxyhydrogen apparatus
Sulphur in organic compounds	Not over 250 mg./m <sup>3</sup> of gas	Burning in an oxyhydrogen apparatus
Hydrogen sulphide content	Not over 0.2 mg./m <sup>3</sup> of gas	Cadmium acetate method
Carbon oxysulphide content	Negative	Alcohol-"Natriumbit" solution
Doctor test (mercaptan)	Negative	Water-"Natriumbit" solution and flowers of sulphur (Schwefelbluete)
Resin and resin formation	Negative	Evaporation residue from liquid gas after treatment with Fuller's earth
Oil traces	Not over 10 mg./10 l.	Evaporation residue from liquid gas after separation of resin and resin formations
Water content	Under pressure no ice and/or hydrocarbon precipitates should be formed above -30°C	Separation by freezing (Ausfrieren) in a Dewa jar according to DIN 1875

1/ ☐ Comment. E stands for Erstarrungspunkt (solidifying point).

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